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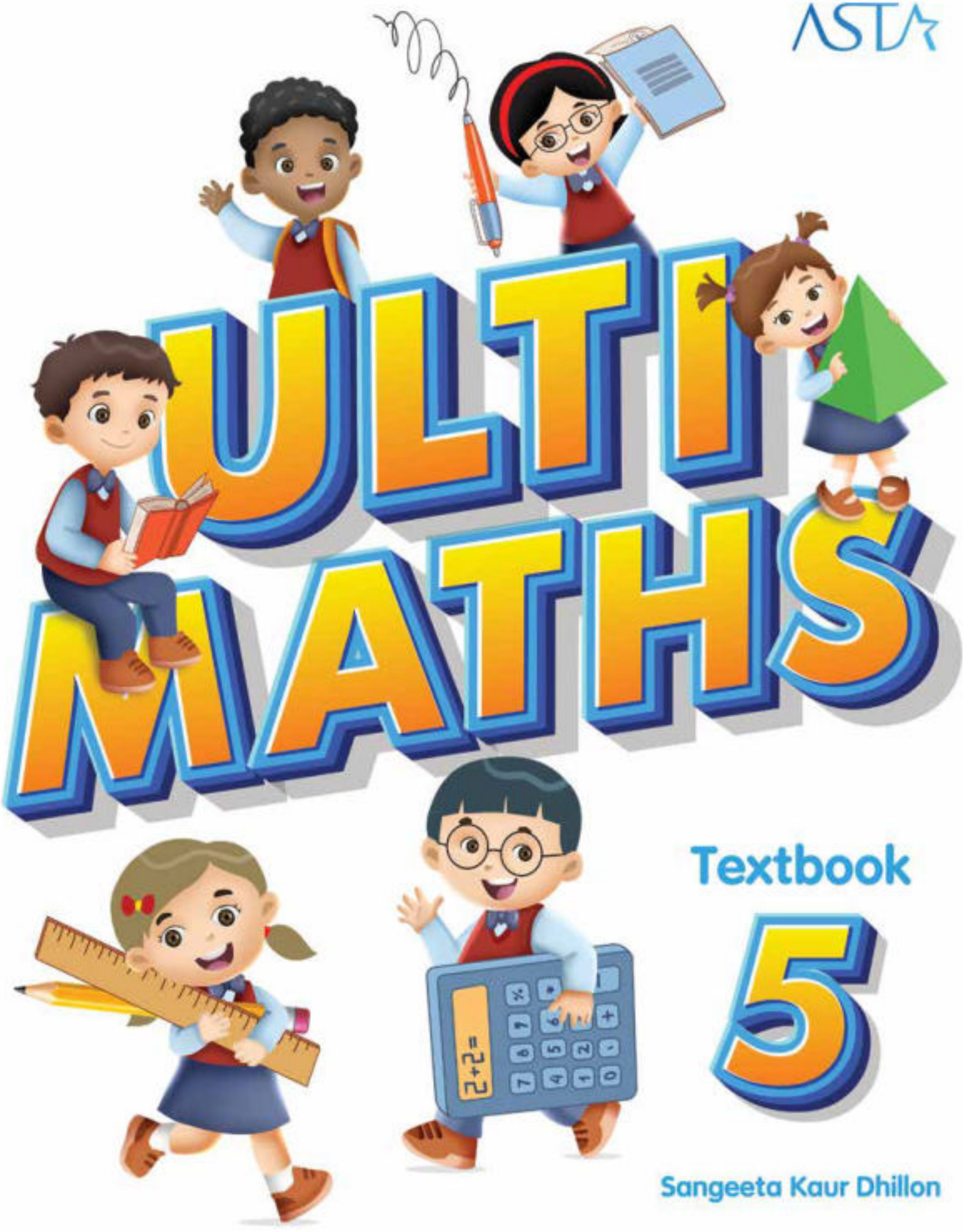

ULTI MATHS

Textbook 5

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Ultimaths - Textbook 5

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Preface

ULTI MATHS is a mathematics learning series for primary school students. The contents are systematically arranged according to the ability of the child, which can be applied in everyday life, and can be used as preparation for the next level.

ULTI MATHS uses an international standard of mathematical teaching and learning approaches, which have been proven to bring children success in learning mathematics. The Concrete-Pictorial-Abstract approach introduces new concepts with the use of appropriate manipulatives, before moving to pictorials and abstract representations. The development of topics across the levels in spiral progression approach helps learners acquire a new concept by building on previously learned concepts. The focus on Problem Solving by promoting the use of bar models, empowers students to develop visualization skills to better understand word problems before solving them.

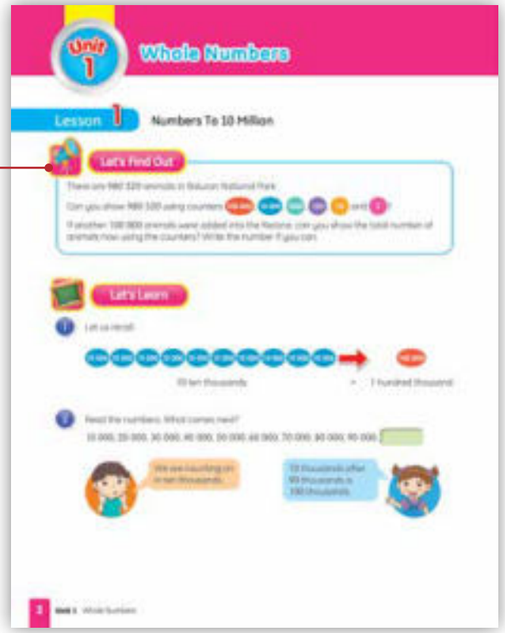
ULTI MATHS provides active, fun, and collaborative mathematics learning with lots of activities and games. These learning experiences will enable students to acquire and apply concepts and skills, develop critical thinking skills, and positive attitudes towards mathematics.

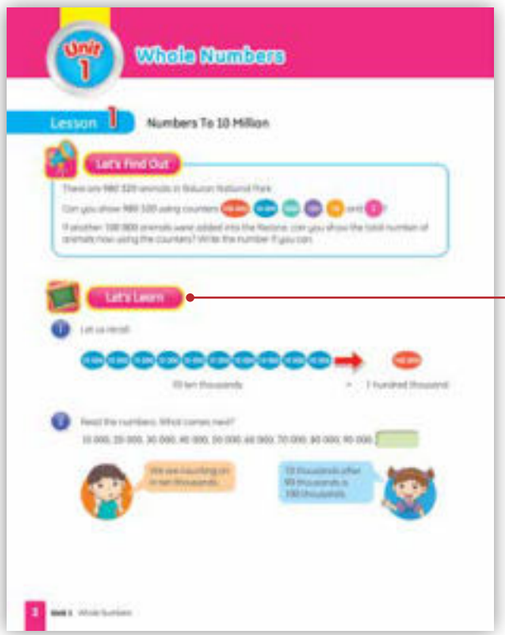
Using This Book

Ultimaths has some special features to help students learn and use this book.

Let's Find Out

To check students' prior knowledge.



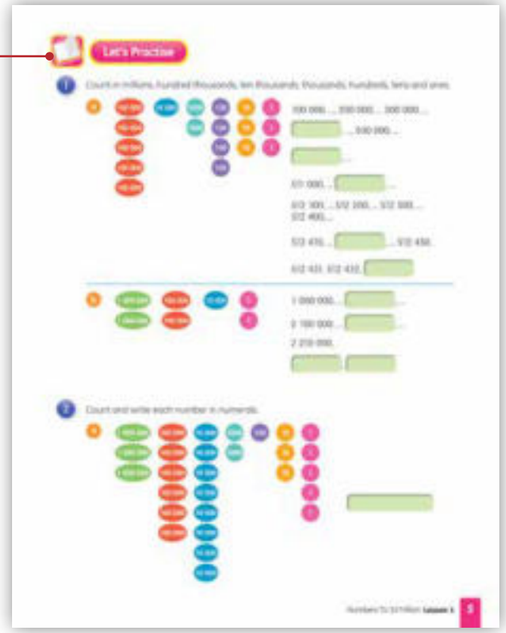


Let's Learn

To introduce concepts, skills, or problem-solving strategies in an engaging way by using Concrete-Pictorial-Abstract approach.

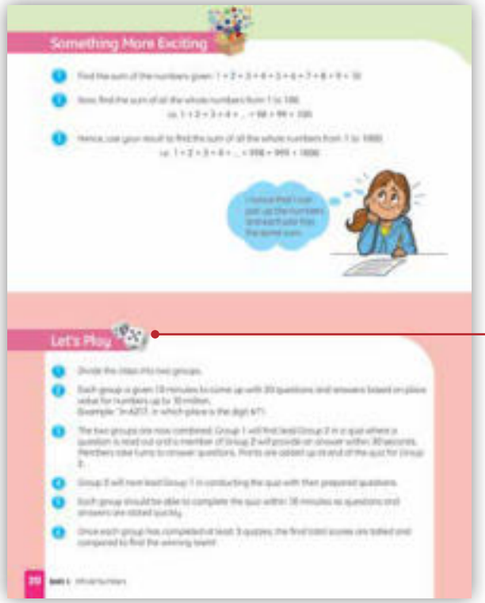
Let's Practise

To practise the concepts learned in Let's Learn section.



Something More Exciting

More challenging practice to stimulate higher order thinking.



Let's Play

Provide fun games to encourage collaboration and to deepen or extend understanding of concepts through the games.

Contents

Unit 1 Whole Numbers

Lesson 1 Numbers To 10 Million

Let's Find Out

There are 980 520 animals in Baluran National Park.

Can you show 980 520 using counters 100 000, 10 000, 1000, 100, 10 and 1?

If another 100 000 animals were added into the Rezone, can you show the total number of animals now using the counters? Write the number if you can.

Let's Learn

1 Let us recall.

10 000 10 000 10 000 10 000 10 000 10 000 10 000 10 000 10 000 10 000 → 100 000

10 ten thousands = 1 hundred thousand

2 Read the numbers. What comes next?

10 000, 20 000, 30 000, 40 000, 50 000, 60 000, 70 000, 80 000, 90 000, ____

We are counting on in ten thousands.

10 thousands after 90 thousands is 100 thousands.

3 Let's count in hundred thousands.

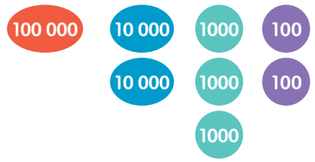
We Count	We Write	We Spell
100 000	100 000	One hundred thousand
100 000 100 000	200 000	Two hundred thousand
100 000 100 000 100 000	300 000	Three hundred thousand
100 000 100 000 100 000 100 000	400 000	Four hundred thousand
100 000 100 000 100 000 100 000 100 000	500 000	Five hundred thousand
100 000 100 000 100 000 100 000 100 000 100 000	600 000	Six hundred thousand
100 000 100 000 100 000 100 000 100 000 100 000 100 000	700 000	Seven hundred thousand
100 000 100 000 100 000 100 000 100 000 100 000 100 000 100 000	800 000	Eight hundred thousand
100 000 100 000 100 000 100 000 100 000 100 000 100 000 100 000	900 000	Nine hundred thousand
100 000 100 000 100 000 100 000 100 000 100 000 100 000 100 000 100 000 100 000	1 000 000	Ten hundred thousand One million

There are 6 zeroes in one million.

10 hundred thousand = 1000 thousand = 1 million

4 Let's count in millions, hundred thousands, ten thousands, thousands, hundreds, tens and ones.

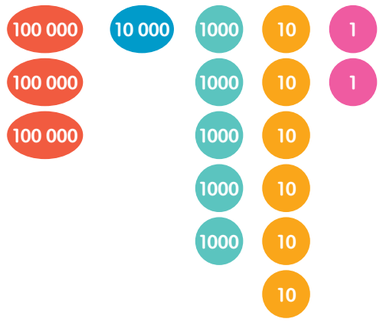
a



100 000, ...
110 000, ... 120 000, ...
121 000, 122 000, 123 000, ...
123 100, ... 123 200

123 200
One hundred and twenty-three thousand and two hundred

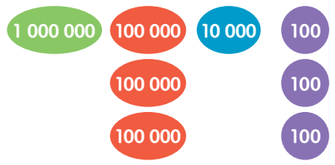
b



100 000, ... 200 000, ... 300 000, ...
310 000, ...
311 000, ... 312 000, ... 313 000, ... 314 000, ...
315 000, ...
315 010, ... 315 020, ... 315 030, ... 315 040, ...
315 050, ... 315 060, ...
315 061, 315 062

315 062
Three hundred and fifteen thousand and sixty-two

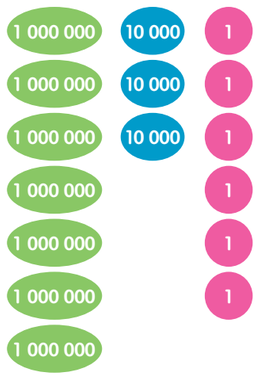
c



1 000 000, ...
1 100 000, ... 1 200 000, ... 1 300 000, ...
1 310 000, ...
1 310 100, ... 1 310 200, ... 1 310 300, ...
1 310 400, ... 1 310 500

1 310 500
One million, three hundred and ten thousand and five hundred

d



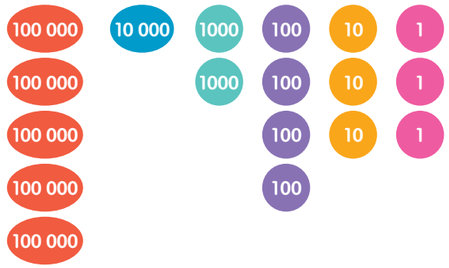
1 000 000, ... 2 000 000, ... 3 000 000, ...
4 000 000, ... 5 000 000, ... 6 000 000, ...
7 000 000, ...
7 010 000, ... 7 020 000, ... 7 030 000,
7 030 001, 7 030 002, 7 030 003,
7 030 004, 7 030 005, 7 030 006

7 030 006
7 million, thirty thousand and six

Let's Practise

1 Count in millions, hundred thousands, ten thousands, thousands, hundreds, tens and ones.

a



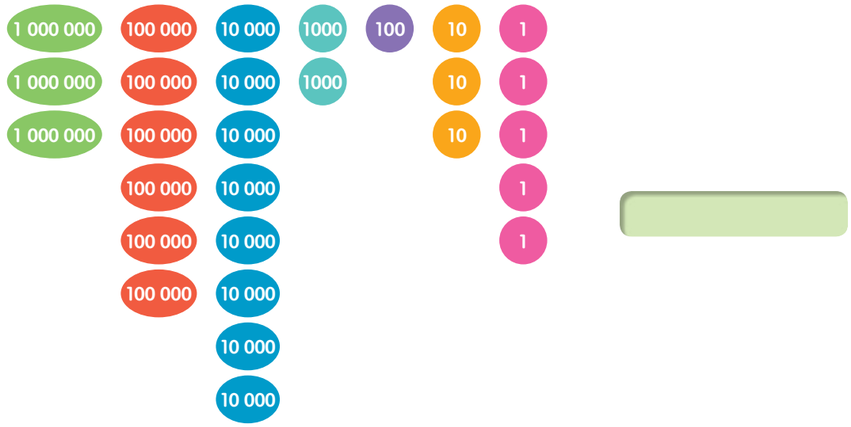
100 000, ..., 200 000, ... 300 000, ...
[ ], ..., 500 000, ...
[ ], ...
511 000, ... [ ], ...
512 100, ... 512 200, ... 512 300, ...
512 400, ...
512 410, ... [ ], ... 512 430,
512 431, 512 432, [ ]

b

1 000 000, ... [ ], ...
2 100 000, ... [ ], ...
2 210 000,
[ ], [ ]

2 Count and write each number in numerals.

a



[ ]

b

1 000 000 | 100 000 | 10 000 | 1000 | 10

1 000 000 | 10 000 | 10

1 000 000 | 10 000 | 10

1 000 000 | 10 000 | 10

1 000 000 | 10

1 000 000 | 10

1 000 000 | 10

3 Write each number in words.

a 507 001

b 635 728

c 6 900 504

d 9 851 027

4 Write each number in numerals.

a Seven hundred and sixty thousand, two hundred and forty-five

b Nine hundred thousand, nine hundred and ninety-nine

c Five million, four hundred and thirty-one thousand and three

d Four million, five hundred and twelve

Workbook: Exercise 1, Page 2 to 5

Lesson 2 Place And Value

Let's Find Out

Can you use this place value table to show the number 1 293 847?

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones

Let's Learn

1 Let's put the number 1 293 847 in a place value table.

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
1	2	9	3	8	4	7

The digit 1 is in the millions place and has a value of 1 000 000.

The digit 2 is in the hundred thousands place and has a value of 200 000.

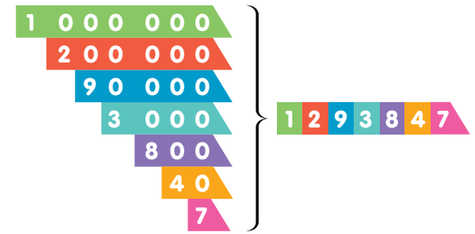
The digit 9 is in the ten thousands place and has a value of 90 000.

The digit 3 is in the thousands place and has a value of 3000.

The digit 8 is in the hundreds place and has a value of 800.

The digit 4 is in the tens place and has a value of 40.

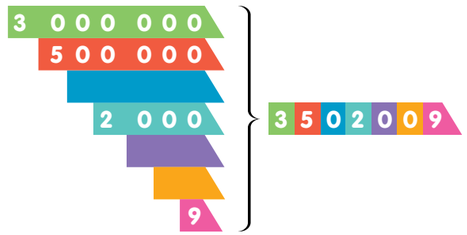
The digit 7 is in the ones place and has a value of 7.

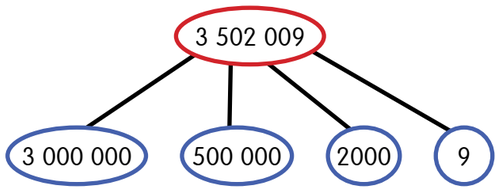


1 293 847 = 1 000 000 + 200 000 + 90 000 + 3000 + 800 + 40 + 7

2 Let's now look at the number 3 502 009.

Place	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
Digit	3	5	0	2	0	0	9
Value	3 000 000	500 000	0	2000	0	0	9





3 502 009 = 3 000 000 + 500 000 + 2000 + 9

Write: Three million, five hundred and two thousand and nine

Let's Practise

1 Put the number 4 174 275 in the place value table. Fill in the boxes with the correct numbers.

a

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones

b The digit ____ is in the millions place. The value of the digit 4 is ____.

c The digit ____ is in the hundred thousands place. The value of the digit 1 is ____.

d The digit ____ is in the ten thousands place. The value of the digit 7 is ____.

e The digit ____ is in the thousands place. The value of the digit 4 is ____.

f The digit ____ is in the hundreds place. The value of the digit 2 is ____.

g The digit ____ is in the tens place. The value of the digit 7 is ____.

h The digit ____ is in the ones place. The value of the digit 5 is ____.

2 Put the number 1 860 392 in the place value table. Fill in the boxes with the correct numbers.

a

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones

b The digit 1 is in the ____ place and has a value of ____.

c The digit ____ is in the hundred thousands place and has a value of ____.

d The digit ____ is in the ten thousands place and has a value of ____.

e The digit 0 is in the ____ place and has a value of ____.

f The digit ____ is in the hundreds place and has a value of ____.

g The digit ____ is in the tens place and has a value of ____.

h The digit ____ is in the ones place and has a value of ____.

3 Let's look at the number 9 059 180.

a Fill in the missing parts.

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
						0

b The digit ____ is in the hundred thousands place.

c The digit 5 has a value of ____.

d The digit in the millions place is ____.

e The digit ____ has a value of 80.

f 9 059 180 = ____ + ____ + ____ + 100 + ____ + ____

Workbook: Exercise 2, Page 6 to 8

Lesson 3 Multiplying By Tens, Hundreds And Thousands

Let's Find Out

What do you get when you multiply a 1-digit number by 10?
How about when you multiply it by 100 or 1000?
What do you get when you multiply a 2-digit, 3-digit or 4-digit number by 10, 100 or 1000?
Can you identify a pattern?

Let's Learn

3.1 Multiplying by 10, 100, 1000

1 **a** 1-digit number × 10

3 × 10 = 30

1 × 10 = 10
1 × 10 = 10

10 + 10 + 10 = 30

b 2-digit number × 10

24 × 10 = 240

20 4

20 × 10 = 200
4 × 10 = 40
200 + 40 = 240

c 3-digit number × 10

432 × 10 = 4320

400 30 2

400 × 10 = 4000
30 × 10 = 300
2 × 10 = 20
4000 + 300 + 20 = 4320

d Identify a pattern

3 × 10 = 30 (add 1 zero)

24 × 10 = 240 (add 1 zero)

432 × 10 = 4320 (add 1 zero)

2 **a** 1-digit number × 100

4×100

10×10

100 = 10 × 10

$= \underline{4 \times 10} \times 10$

$= 40 \times 10$

$= 400$

b 2-digit number × 100

36×100

10×10

$= \underline{36 \times 10} \times 10$

$= 360 \times 10$

$= 3600$

c 3-digit number × 100

815×100

10×10

$= \underline{815 \times 10} \times 10$

$= 8150 \times 10$

$= 81\ 500$

d Identify a pattern

$4 \times 1\underline{00} = 4\underline{00}$ (add 2 zeros)

$36 \times 1\underline{00} = 36\underline{00}$ (add 2 zeros)

$815 \times 1\underline{00} = 81\ 5\underline{00}$ (add 2 zeros)

3 **a** 1-digit number × 1000

6×1000

$10 \times 10 \times 10$

$= \underline{6 \times 10 \times 10} \times 10$

$= 600 \times 10$

$= 6000$

b 2-digit number × 1000

48×1000

$10 \times 10 \times 10$

$= \underline{48 \times 10 \times 10} \times 10$

$= 4800 \times 10$

$= 48\ 000$

c 3-digit number × 1000

756×1000

$10 \times 10 \times 10$

$= \underline{756 \times 10 \times 10} \times 10$

$= 75\ 600 \times 10$

$= 756\ 000$

d 3-digit number × 1000

1234×1000

$10 \times 10 \times 10$

$= \underline{1234 \times 10} \times 10 \times 10$

$= \underline{12\ 340 \times 10} \times 10$

$= 123\ 400 \times 10$

$= 1\ 234\ 000$

e Identify a pattern

$6 \times 1\underline{000} = 6\underline{000}$ (add 3 zeros)

$48 \times 1\underline{000} = 48\ \underline{000}$ (add 3 zeros)

$756 \times 1\underline{000} = 756\ \underline{000}$ (add 3 zeros)

$1234 \times 1\underline{000} = 1\ 234\ \underline{000}$ (add 3 zeros)

Can you see a pattern when you multiply a number by 10, 100 and 1000?

3.2 Multiplying by 10's, 100's, 1000's

Let's multiply numbers by 10's, 100's or 1000's.

a $57 \times 30 = 57 \times 3 \times 10$

$= 171 \times 10$

$= 1710$

OR $57 \times 30 = 57 \times 10 \times 3$

$= 570 \times 3$

$= 1710$

So, we can multiply the digit first and then 10, or vice versa.

b $826 \times 500 = 826 \times 5 \times 100$

$= 4130 \times 100$

$= 413\ 000$

OR $826 \times 500 = 826 \times 100 \times 5$

$= 82\ 600 \times 5$

$= 413\ 000$

c $2903 \times 2000 = 2903 \times 2 \times 1000$

$= 5806 \times 1000$

$= 5\ 806\ 000$

OR $2903 \times 2000 = 2903 \times 1000 \times 2$

$= 2\ 903\ 000 \times 2$

$= 5\ 806\ 000$

Let's Practise

1 Fill in the blanks with **tens**, **hundreds** or **thousands**.

a $3 \times 100 = 300$

$= 3$ ____

b $42 \times 10 = 420$

$= 42$ ____

c $521 \times 1000 = 521\,000$

$= 521$ ____

d $36 \times 100 = 3600$

$= 36$ ____

2 Fill in the blanks.

a $12 \times 10 =$ ____

$12 \times 100 =$ ____

$12 \times 1000 =$ ____

b $452 \times 10 =$ ____

$452 \times 100 =$ ____

$452 \times 1000 =$ ____

3 Fill in the missing numbers.

a $5627 \times 20 =$ ____ $\times 2 \times$ ____

$=$ ____ $\times 10$

$=$ ____

b $986 \times 400 =$ ____ $\times$ ____ $\times 100$

$=$ ____ $\times$ ____

$=$ ____

c $81 \times 700 = 81 \times$ ____ $\times$ ____

$=$ ____ $\times$ ____

$=$ ____

d $27 \times 9000 = 27 \times$ ____ $\times$ ____

$=$ ____ $\times$ ____

$=$ ____

Workbook: Exercise 3, Page 9 to 12

Lesson 4 Dividing By Tens, Hundreds And Thousands

Let's Find Out

What do you get when you divide tens by 10?
How about when you divide hundreds or thousands by 10?
What do you get when you divide hundreds by 100 or thousands by 100 and 1000?
Can you identify a pattern?

Let's Learn

4.1 Dividing by 10, 100, 1000

1 a Tens ÷ by 10

$40 \div 10 = 4$

$10 \div 10 = 1$

$10 \div 10 = 1$

b Hundreds ÷ by 10

$100 \div 10$
$=$ 10 tens $\div 10$
$=$ 1 ten
$=$ 10

c $300 \div 10$
$=$ 30 tens $\div 10$
$=$ 3 tens
$=$ 30

d $520 \div 10 = 52$

500 20

$500 \div 10 = 50$
$20 \div 10 = 2$
$50 + 2 = 52$

From b, $500 \div 10 = 50$

From a, $20 \div 10 = 2$

e Thousands ÷ by 10

$3000 \div 10$
$=$ 300 tens $\div 10$
$=$ 30 tens
$=$ 300

f $3250 \div 10 = 325$

3000 200 50

$3000 \div 10 = 300$ (from e)
$200 \div 10 = 20$ (from c)
$50 \div 10 = 5$ (from a)

$300 + 20 + 5 = 325$

2 **a** Hundreds ÷ by 100

200 ÷ 100 = 2

100 ÷ 100 = 1

100 ÷ 100 = 1

b Thousands ÷ by 100

1000 ÷ 100
= 100 tens ÷ 100
= 1 ten
= 10

c 6000 ÷ 100
= 600 tens ÷ 100
= 6 tens
= 60

d 6300 ÷ 100 = 63

6000 300

6000 ÷ 100 = 60
300 ÷ 100 = 3

60 + 3 = 63

3 **a** Thousands ÷ by 1000

4000 ÷ 1000 = 4

1000 ÷ 1000 = 1
1000 ÷ 1000 = 1
1000 ÷ 1000 = 1
1000 ÷ 1000 = 1

b 10 000 ÷ 1000
= 1000 tens ÷ 1000
= 1 ten
= 10

c 80 000 ÷ 1000
= 8000 tens ÷ 1000
= 8 tens
= 80

d 84 000 ÷ 1000 = 84

80 000 4000

80 000 ÷ 1000 = 80
4000 ÷ 1000 = 4

80 + 4 = 84

e Can you see a pattern when you divide a number by 10, 100 or 1000?

4.2 Dividing by 10's, 100's, 1000's

Let's divide numbers by 10's, 100's or 1000's.

a 80 ÷ 40 = 80 ÷ 4 ÷ 10
= 20 ÷ 10
= 2

OR 80 ÷ 40 = 80 ÷ 10 ÷ 4
= 8 ÷ 4
= 2

Dividing by 40 is the same as dividing by 4 then by 10 or dividing by 10 then by 4.

b 6600 ÷ 600 = 6600 ÷ 6 ÷ 100
= 1100 ÷ 100
= 11

OR 6600 ÷ 600 = 6600 ÷ 100 ÷ 6
= 66 ÷ 6
= 11

600 = 6 × 100
or
600 = 100 × 6

c 35 000 ÷ 7000 = 35 000 ÷ 7 ÷ 1000
= 5000 ÷ 1000
= 5

OR 35 000 ÷ 7000 = 35 000 ÷ 1000 ÷ 7
= 35 ÷ 7
= 5

7000 = 7 × 1000
or
7000 = 1000 × 7

Let's Practise

1 Fill in the blanks with **ones**, **tens**, **hundreds** or **thousands**.

a) 4000 ÷ 10 = 4 ☐ ÷ 10 = 4 ☐

4000 ÷ 100 = 4 ☐ ÷ 100 = 4 ☐

4000 ÷ 1000 = 4 ☐ ÷ 1000 = 4 ☐

b) 73 000 ÷ 10 = 73 ☐ ÷ 10 = 73 ☐

73 000 ÷ 100 = 73 ☐ ÷ 100 = 73 ☐

73 000 ÷ 1000 = 73 ☐ ÷ 1000 = 73 ☐

2 Fill in the blanks.

a) 37 000 ÷ 10 = ☐

37 000 ÷ 100 = ☐

37 000 ÷ 1000 = ☐

b) 651 000 ÷ 10 = ☐

651 000 ÷ 100 = ☐

651 000 ÷ 1000 = ☐

3 Fill in missing numbers.

a) 40 ÷ 20 = ☐ ÷ 2 ÷ ☐

= ☐ ÷ ☐

= ☐

20 = 2 × ☐

b) 2500 ÷ 500 = ☐ ÷ ☐ ÷ 100

= ☐ ÷ 100

= ☐

500 = ☐ × 100

c) 720 000 ÷ 8000 = 720 000 ÷ ☐ ÷ ☐

= ☐ ÷ ☐

= ☐

8000 = ☐ × 1000

d) 27 000 ÷ 3000 = 27 000 ÷ ☐ ÷ ☐

= ☐ ÷ ☐

= ☐

3000 = 3 × ☐

Workbook: Exercise 4, Page 13 to 16

Something More Exciting

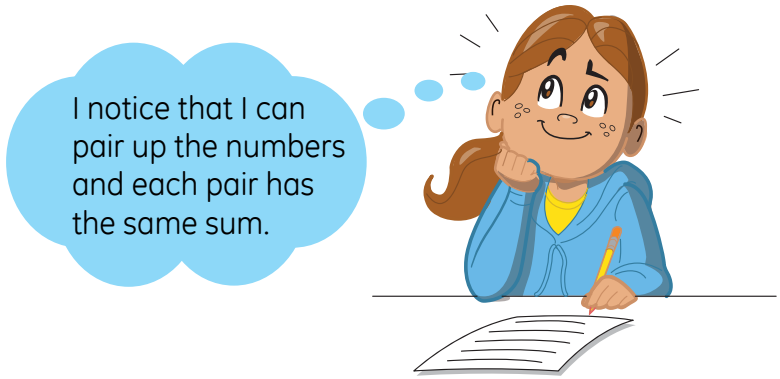
1. Find the sum of the numbers given: 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10

2. Now, find the sum of all the whole numbers from 1 to 100.

   i.e. 1 + 2 + 3 + 4 + ... + 98 + 99 + 100

3. Hence, use your result to find the sum of all the whole numbers from 1 to 1000.

   i.e. 1 + 2 + 3 + 4 + ... + 998 + 999 + 1000



Let's Play

1. Divide the class into two groups.

2. Each group is given 10 minutes to come up with 20 questions and answers based on place value for numbers up to 10 million.
   (Example: "In 6217, in which place is the digit 6?")

3. The two groups are now combined. Group 1 will first lead Group 2 in a quiz where a question is read out and a member of Group 2 will provide an answer within 30 seconds. Members take turns to answer questions. Points are added up at end of the quiz for Group 2.

4. Group 2 will next lead Group 1 in conducting the quiz with their prepared questions.

5. Each group should be able to complete the quiz within 10 minutes as questions and answers are stated quickly.

6. Once each group has completed at least 3 quizzes, the final total scores are tallied and compared to find the winning team!